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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/676,665	10/01/2003	David E. Lowell	200208636-1	8983

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EXAMINER

ZHE, MENG YAO

ART UNIT	PAPER NUMBER
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2109

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/676,665	Applicant(s) LOWELL ET AL.	
	Examiner MengYao Zhe	Art Unit 2109	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 to 43 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-43 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on _____ is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This is the initial Office Action based on the 10/676665 application filed on 10/01/2003.

Oath/Declaration

The name of the applicant Caroline M.Tice is spelled incorrectly on the Oath/Declaration form. While the applicant has signed Tice with an "e", the form spells it as Tic, with no "e". Appropriate corrections must be made.

Specification

Page 13 of the specification lists three references that do not have the U.S. serial number and filing date. Appropriate corrections must be made.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

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Claims 1 to 3, 10 to 13, 15 to 23, 27, 28, 30 to 34, 38, 39, 41 to 43 are rejected under 35 U.S.C 102(e) as being anticipated by Adamovits et al. (hereafter Adamovits), Patent No. 6,698,017.

As per claim 1, 21, 33, Adamovits teaches A method of performing online computer maintenance on at least one node, the method comprising:

**running a virtual machine monitor; (Column 1, lines 65 to Column 2, line 5:
the apparatus for migrating control corresponds to the monitor)**

**running a first operating instance on the virtual machine monitor; (Figure 2,
Original software system 50)**

**running a second operating system instance on the virtual machine
monitor as a substitute for the first instance; and (Figure 2, Replacement
Software System 70)**

**performing the maintenance with respect to one of the instances while
using the other of the instances. (Column 1, lines 11 to 35: Background
provides motivation for process migration, one of them is software upgrade,
which corresponds to a type of maintenance.)**

**As per claim 2, 22, Adamovits teaches the method of claim 1, wherein the second
operating system is run as a substitute by migrating at least one application from**

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the first instance to the second instance, and using the migrated applications on the second instance. (*Column 1 lines 65 to Column 2, lines 30*)

As per claim 3, 23, 34, Adamovits teaches the method of claim 1, further comprising shutting down the first instance after the second instance has been run as a substitute. (*Column 2 lines 24 to 45, Column 6, lines 55 to 60: shutting down the first instance corresponds to handing over complete control from the first software system to the replacement software system.*)

As per claim 10, 27, 38, Adamovits teaches the method of claim 1, wherein applications running on the first operating system instance are migrated to the second instance; and wherein software maintenance is performed. (*Column 1 lines 65 to Column 2, lines 55*)

As per claim 11, Adamovits teaches the method of claim 10, further comprising shutting down one of the instances after the applications have been migrated. (*Column 6, lines 50 to 60*)

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As per claim 12, Adamovits the method of claim 1, wherein the second operating system instance is an upgraded operating system; and wherein applications running on the first operating system instance are migrated to the second instance. (Column 1, lines 10 to 35, Column 1, line 65 to Column 2 line30)

As per claim 13, 28, 39, Adamovits teaches the method of claim 1, wherein the maintenance includes modifying the second operating system instance; and wherein the method further includes migrating applications running on the first operating system instance to the second instance. (Column 13, lines 1 to 15: Mapping and storing corresponds to modifying.)

As per claim 15, Adamovits teaches the method of claim 1, wherein a first application instance is running on the first operating system instance before the maintenance is performed; and wherein the maintenance includes running a second application instance on the second OS instance, and modifying the second application instance, and cutting over from the first application instance to the modified second application instance. (Column 13, lines 1 to 15: Mapping and storing corresponds to modifying. Column 6, lines 55 to 60 reads on cutting over.)

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As per claim 16, 30, 41, Adamovits teaches the method of claim 1, wherein the virtual machine monitor allows at least one of the operating system instances to have direct control over at least one of a processing unit, memory and I/O of the at least one node. (Column 1, line 65 to Column 2 Line 39 and Column 6, lines 55 to 60)

As per claim 17, 31, 42, Adamovits teaches the method of claim 1, wherein first instance is booted prior to running the virtual machine monitor; and wherein the virtual machine monitor is interposed beneath the first operating system instance when maintenance is to be performed. (Column 5, lines 45 to 65; Figure 2 shoes that the original system is already up and running before migration.)

As per claim 18, 32, 43, Adamovits teaches the method of claim 1, wherein at least one of a processing unit, memory and I/O is devirtualized after the maintenance has been performed. (Figure 12, the original is disabled.)

As per claim 19, Adamovits teaches the method of claim 1, wherein a single processor is used to run the virtual machine monitor and the multiple operating system instances. (Figure 1, Processor 12, it is the one and only processor in the system as disclose.)

As per claim 20, Adamovits teaches the method of claim 1, wherein a single node is used to run the virtual machine monitor and the multiple operating system instances. (Column 6, lines 20 to 65, Figure 1 and Figure 2.)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 14, 29, 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Adamovits et al. (Adamovits), Patent No. 6,698,017

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As per claim 14, 29, 40, Adamovits teaches the method of claim 1, further comprising migrating applications from the first instance to the second instance before the maintenance is performed;

Adamovits, however, is silent to, the specifics of

migrating the applications from the second instance back to the first instance after the maintenance has been performed; and shutting down the second instance following the application migration to the first instance.

There is nothing in the teaching of Adamovits to prevent reinitializing the first instance should the second instance wish to migrate its applications back to the instance one. Moreover, since it is taught to migrate to an upgraded second instance while shutting down the first instance, it would be obvious to one having ordinary skill in the art of process migration on virtual machines to move back to the first instance should the first instance get upgraded as well.

Claims 4 to 9, 24 to 26, 35 to 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Adamovits et al. (Adamovits), Patent No. 6,698,017 in view of Tremain, Pub No. US 2002/0069369.

Adamovits teaches the method of claim 1, 21, 33, and

Claim 6, 24, 35: wherein the virtual machine monitor is used to hide the hardware to be serviced from the second instance during bootup of the second instance. *(Column 5, lines 30 to 45, Column 6, lines 20 to 25: each instance gets its own partition of hardware for usage, the virtual machine monitor is responsible for distribution of the resources and preventing one instance from accessing resources of another.)*

Claim 7: wherein the virtual machine monitor releases its own dependencies on that hardware prior to removal. *(Column 13, lines 1 to 10: all the original data structure stored in the hardware of the first instance is mapped onto the second instance. Therefore, dependencies on old hardware that the first instance runs on is no longer needed.)*

Adamovits does not specify

Claim 4: wherein the maintenance includes hardware servicing; and wherein the second operating system instance is run without a dependency on the hardware to be serviced.

Claim 5, 6, 7, 24, 35: wherein the servicing includes removing the hardware from a node.

Claim 8, 25, 36: wherein the maintenance includes hardware addition; wherein the virtual machine monitor discovers the added hardware; and

wherein the virtual machine monitor shields the first operating system instance from the hardware as the hardware is being added.

Claim 9, 26, 37: The method of claim 8, wherein the hardware is added before the second instance is booted; and wherein the second instance is allowed during bootup to see the added hardware.

However, Tremain teaches

Claim 4: wherein the maintenance includes hardware servicing; and wherein the second operating system instance is run without a dependency on the hardware to be serviced for the purpose of configuration while running servers. (Paragraphs 43, 44, 212)

Claim 5, 6, 7, 24, 35: wherein the servicing includes removing the hardware from a node for the purpose of configuration while running servers. (Paragraphs 43, 44, 212)

Claim 8, 25, 36: wherein the maintenance includes hardware addition; wherein the virtual machine monitor discovers the added hardware; and wherein the virtual machine monitor shields the first operating system instance from the hardware as the hardware is being added for the purpose of configuration while running servers. (Paragraphs 43, 44, 212)

Claim 9, 26, 37: The method of claim 8, wherein the hardware is added before the second instance is booted; and wherein the second instance is allowed during bootup to see the added hardware for the purpose of

configuration while running servers. (*Paragraphs 43, 44, 212 of Tremain; Column 3, lines 25 to 50 and lines 45 to 65: virtual machine layer directs each of the instances.*)

It would have been obvious to one having ordinary skill in the art at the time of the applicant's invention to have modified the invention of Adamovits with

Claim 4: wherein the maintenance includes hardware servicing; and wherein the second operating system instance is run without a dependency on the hardware to be serviced

Claim 5, 6, 7, 24, 35: wherein the servicing includes removing the hardware from a node

Claim 8, 25, 36: wherein the maintenance includes hardware addition; wherein the virtual machine monitor discovers the added hardware; and wherein the virtual machine monitor shields the first operating system instance from the hardware as the hardware is being added

Claim 9, 26, 37: The method of claim 8, wherein the hardware is added before the second instance is booted; and wherein the second instance is allowed during bootup to see the added hardware

as taught by Tremain, because it allows for configuration while running servers.

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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MengYao Zhe whose telephone number is 571-272-6946. The examiner can normally be reached on Monday Through Friday, 7:30 - 5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Del Sole can be reached on 571-272-1130. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

M.Z.


JOSEPH DEL SOLE
SUPERVISORY PATENT EXAMINER

6/7/07